

**Simplot Responses to Agency Comments (June 29, 2015) on
“Draft Smoky Canyon Mine Pilot Study Work Plan/Sampling and Analysis Plan, Biological
Selenium Removal Treatment Technology, Fluidized Bed Bioreactor, Addendum 01”
(dated May 2015)**

General Comments

The plan proposes potential increases of phosphorous to the receiving waters from <0.1 mg/L up to near 0.25 mg/L. There is little available information on potential phosphorous impacts to fisheries. The most notable potential impact would most likely be an increase in algae growth. This in turn, could impact water quality, food resources and decrease oxygen in the water, all of which could affect the fishery. The Agencies request that Simplot monitor for algae growth at the discharge to Hoopes Springs when they conduct their weekly sampling. Additionally, since algae growth has the potential to affect food resources (i.e., abundance of aquatic invertebrates), the Agencies request that baseline aquatic invertebrate surveying be conducted to monitor density and diversity of aquatic invertebrates immediately downstream of the effluent discharge, with additional surveying to be completed after week 12 of operation (or if unusual algae growth becomes apparent). The results of the aquatic invertebrate surveys are to be reported in the first available monthly or quarterly report after the data have been collected and validated.

Response: The comment doesn't appear to account for the dilution of pilot treatment effluent when it mixes with the much larger untreated flow in Hoopes Spring. If the phosphorus concentration in the effluent is at the estimated maximum of 0.25 mg/L (at 250 gpm) and is mixed with Hoopes Spring discharge untreated water with a phosphorus concentration of 0.01 mg/L (at average flow of 3,000 gpm), then the phosphorus concentration after mixing is calculated to be 0.028 mg/L. This calculated concentration is similar to phosphorus concentrations measured in areas with potential grazing effects including Sage Creek and Crow Creek and is well below TMDL target concentrations established for streams and rivers in the Western United States. Phosphorus concentrations are therefore predicted to be below any potential levels of concern for algae growth and Simplot believes that this issue does not warrant additional study for this pilot system.

However, to address this Agency comment, Simplot will compile and evaluate existing aquatic invertebrate density and diversity data for HS-3 (also show IDEQ Stream Macroinvertebrate Index [SMI] values), including data collected from 2006 to 2008 and in 2010 and at other times. This pre-water treatment dataset could be viewed as “baseline” or “pre-water treatment”. In addition, aquatic invertebrate data will be collected at HS-3 in mid to late August 2015. After identifying the species and conducting other reviews of the August data, the new data will be compared with previous data to characterize aquatic invertebrate density and diversity with time. With this information, other evaluations may be considered which may include data collection next year, if warranted. The additional aquatic invertebrate data collection planned for August 2015 is discussed in new Section 6.8, and a discussion on the data evaluation has been added to Section 7.1.

The temperature change outlined in the Work Plan/SAP could have an impact on the fishery. Increasing temperature from 11 to 17°C (Table 2-3) in the effluent could be significant, especially if Hoopes Springs and S. Fork Sage Creek make up a significant portion of the flow in Sage Creek. IDEQ's Maximum Daily Average Temperature for cold water biota is 19°C. If Hoopes Spring and South Fork Sage makes up most of the flow for Sage Creek, the increase in those streams could result in temperatures that exceed 19°C below the confluence of Hoopes, S. Fork Sage and Sage Creeks. Additionally, it is assumed that discharge will occur 24-hours a day, eliminating daily fluctuations in temperature. Fish can survive in higher water temperatures during the hottest part of the day as long as temperatures drop at night; but if discharge is occurring 24-hours a day, a constant increase in temperature is more likely to impact fish. The Agencies request that in addition to monitoring temperature (and other field parameters) in Hoopes Spring and S. Fork Sage Creek below the effluent discharge, that field parameters also be monitored at the confluences of Hoopes/S. Fork Sage Creek and Sage Creek.

Response: Again, the comment appears to not account for mixing of the effluent with untreated portion of Hoopes Spring. An increase in effluent temperature of 6 °C would result in an increase of 0.5 °C in the receiving stream (6x250/3000). Similar to the phosphorus comment, Simplot believes that this increase would be below levels that could affect fish populations and that additional study is not warranted for this pilot system.

However, to address this Agency comment, Simplot will compile and evaluate stream temperature data collected continuously at the following locations: HS-3 (downstream from Hoopes), LSV-2c (Sage Creek downstream from the Hoopes inflow), and LSS (SF Sage Creek). Continuous temperature data are available at HS-3 and LSV-2c, which have been logging temperatures September to November 2014 and April 2015 to present. At the LSS flume, temperature data have also been logged continuously from 2009 to present. These datasets will provide diurnal temperature data, including maximum and minimum temperatures downstream from Hoopes (HS-3), downstream of Hoopes flow in Sage Creek (LSV-2c), and on South Fork Sage Creek uninfluenced by Hoopes (LSS). After this initial evaluation, temperature data will be downloaded at these locations every two to three months for regular review of temperature trends and evaluation of potential effects of the pilot study on fish. These additional temperature data compilation and evaluation activities have been added to the discussion in Section 7.1.